

**MANHOLE
FRAMES & COVERS**

—●—

DRAIN GRATES

—●—

SEWER INLETS



Banner Iron Works

1920 SO. KINGSHIGHWAY • ZONE 10

Saint Louis

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Banner Iron Works

1920 So. Kingshighway Blvd.

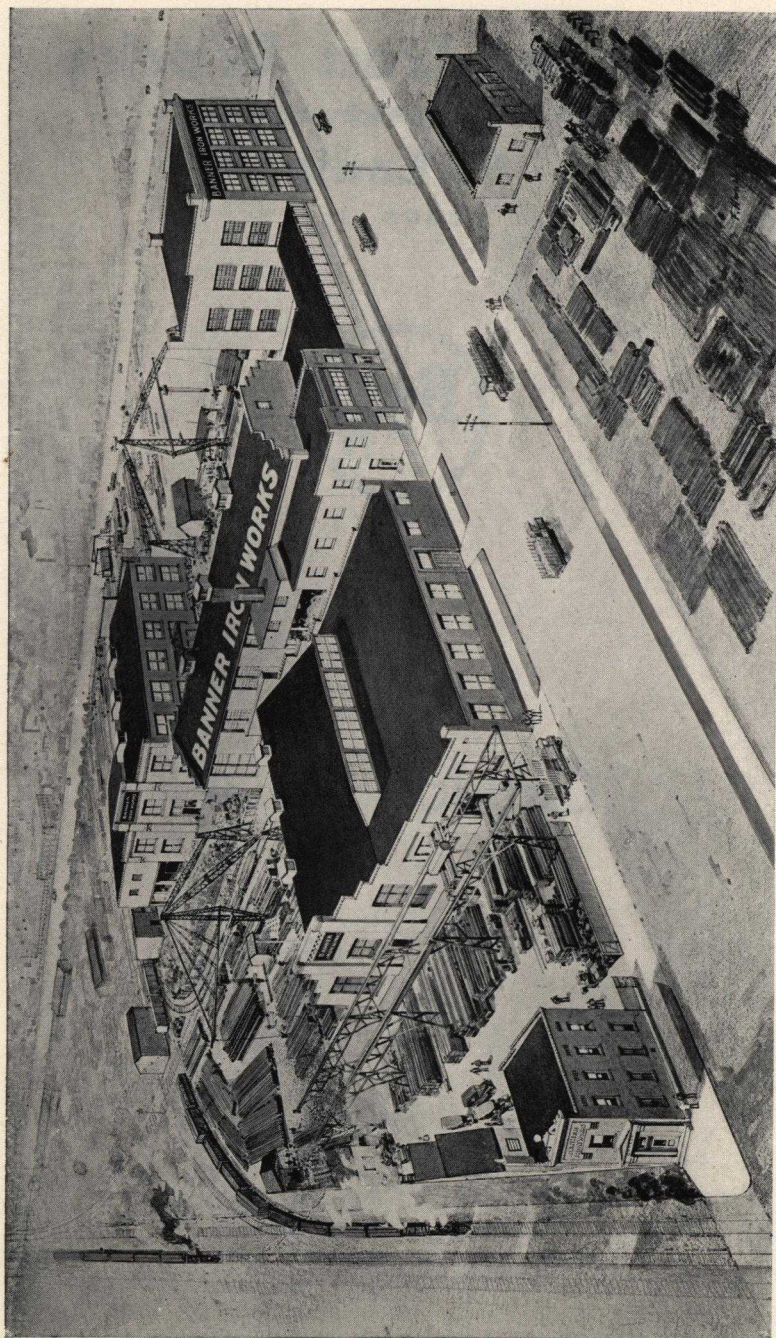
St. Louis

ZONE 10



Catalog No. 4

BANNER IRON WORKS



CATALOG No. 4

GENERAL INFORMATION

THIS CATALOG has been especially prepared for the use of Engineers and Contractors as a handy reference for selecting stock designs of iron castings for use in connection with storm and foul water sewers, streets, highways, drainage, and other work of a similar nature.

In this revised catalog, a number of new patterns that were not shown in previous issues have been added. All cuts have been made to show the necessary details only. The description of the cuts gives the general dimensions and weights.

The grouping of the various designs has been arranged so that all those of a similar nature follow in sequence. This grouping is as follows:

Round Grates.....	Page 4
Round Grates and Frames.....	Pages 5 to 8 inclusive
Round Solid Covers and Frames.....	Pages 9 to 22 inclusive
Round Inlet Covers.....	Page 23
Manhole Steps.....	Page 24
Rectangular Solid Covers and Frames.....	Pages 25 to 33 inclusive
Rectangular Grates and Frames.....	Pages 34 to 40 inclusive
Rectangular Grates.....	Pages 41 to 43 inclusive
Grate Bars and Boiler Grates.....	Page 44

We usually carry in stock a sufficient quantity of most patterns to meet ordinary demands. Our facilities enable us to make prompt delivery of quantity orders.

All castings are made of a high quality Gray Iron and have a tensile strength of about 25,000 p.s.i. Higher tensile strengths can be furnished if required.

We are prepared to furnish any special castings not shown. Let us quote you on your requirements.

ADDRESS ALL COMMUNICATIONS TO

Banner Iron Works

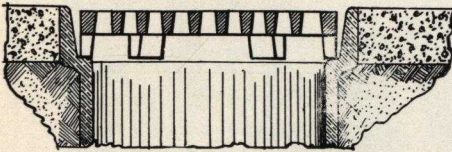
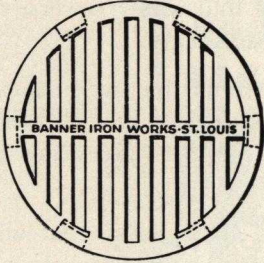
1920 South Kingshighway Boulevard

SAINT LOUIS 10, MISSOURI

ROUND GRATES

To Fit in Bell Ends of Standard Clay Pipe

No. 4710



Sectional View Showing Bell End of Sewer Pipe
in Concrete Floor with Grate in Place

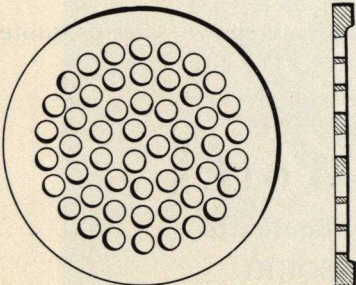
Diameter of Pipe (Inches)	Diameter of Grate (Inches)	Weight of Grate (Pounds)
4	5 $\frac{1}{8}$	2
6	7 $\frac{1}{2}$	4
8	9 $\frac{3}{4}$	8
10	11 $\frac{5}{8}$	15
12	14	18
15	18 $\frac{3}{8}$	51
18	21 $\frac{3}{8}$	62
20	23 $\frac{1}{4}$	92
21	25 $\frac{1}{2}$	95
24	28	137
30	34 $\frac{1}{2}$	275
36	42 $\frac{1}{2}$	385

Grates for 12" pipe and under do
not have center rib.

Extra Heavy grate with center rib
can be furnished for 12" Φ pipe.

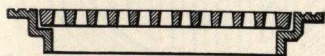
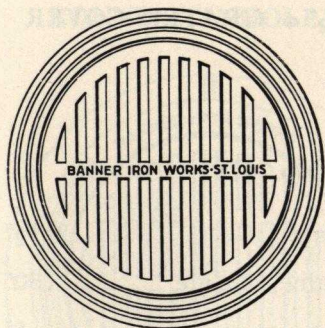
ROUND DRAIN PLATES

To Fit in Bell Ends of Standard Clay Pipe



No. 4711

Diameter of Pipe (Inches)	Diameter of Grate (Inches)	Weight of Grate (Pounds)
4	5 $\frac{1}{8}$	1 $\frac{1}{4}$
6	7 $\frac{1}{2}$	2 $\frac{3}{4}$
8	9 $\frac{3}{4}$	8 $\frac{1}{4}$



ROUND FRAMES WITH GRADED COVERS

10" to 32½" Diameter

No. 4570

By using an iron frame for grate to set in, as shown here, the breaking or cracking of granitoid or clay pipe will be greatly reduced.

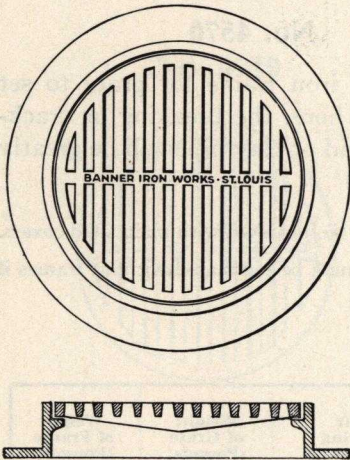
Frames can also be furnished with plain solid covers.

NOTE: Grates may be purchased without frames if desired.

Diameter of Grate (Inches)	Outside Diameter of Frame (Inches)	Depth of Frame (Inches)	Clear Opening (Inches)	Weight of Grate (Pounds)	Weight of Frame (Pounds)
10	14	2½	8⅝	12	21
12	16	2½	10½	15	26
15	19	2¾	13½	30	34
16	20	3	14¼	37	37
18	22	3	15¼	50	48
20	24	4	18⅛	53	68
22	26	4	20¼	80	71
24	28	4	22	100	78
26	30	4	24¼	107	95
32½	37	4	30	180	115

ROUND MANHOLE FRAME WITH $21\frac{1}{2}"$ ϕ GRATED COVER

Light Duty Grate



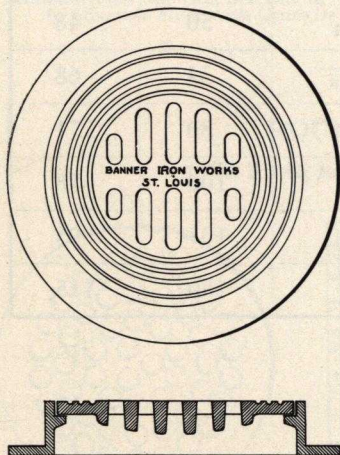
No. 4791

Diameter of Grate.....	21 $\frac{1}{2}"$
Diameter of Frame, outside.....	30"
Height of Frame.....	5"
Diameter of Clear Opening.....	19 $\frac{1}{2}"$
Depth of Rabbet.....	1 $\frac{1}{4}"$
Weight of Grate.....	75 lbs.
Weight of Frame.....	103 lbs.



ROUND MANHOLE FRAME WITH $21\frac{3}{4}"$ ϕ GRATED COVER

Heavy Duty Grate



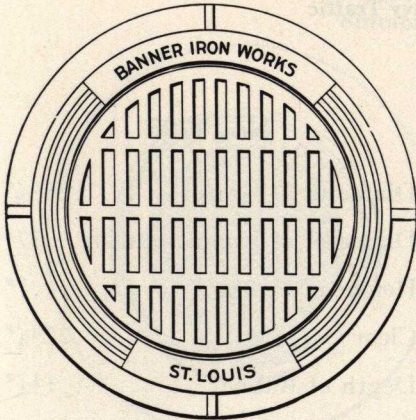
No. 4792

Diameter of Grate.....	21 $\frac{3}{4}"$
Diameter of Frame, outside.....	30"
Height of Frame.....	5"
Diameter of Clear Opening.....	19 $\frac{1}{2}"$
Depth of Rabbet.....	1 $\frac{1}{4}"$
Weight of Grate.....	136 lbs.
Weight of Frame.....	103 lbs.

4903—Grate
4791—Frame

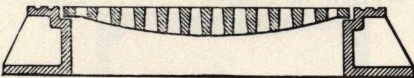
ROUND MANHOLE FRAME WITH 26" ϕ GRATED COVER

Heavy Duty Grate



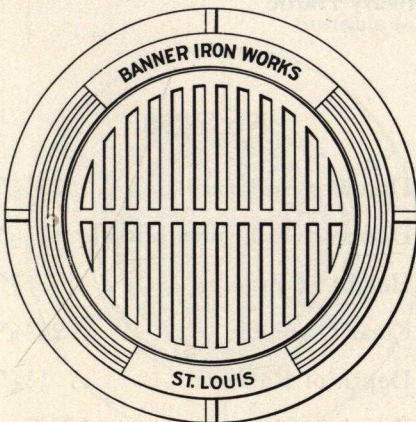
No. 4170

Diameter of Grate.....26"
 Diameter of Frame, outside. 36 $\frac{1}{2}$ "
 Height of Frame.....6"
 Diameter of Clear Opening....24"
 Depth of Rabbet.....1 $\frac{1}{4}$ "
 Weight of Frame.....250 lbs.
 Weight of Grate.....160 lbs.



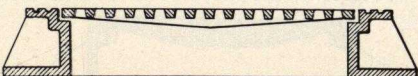
ROUND MANHOLE FRAME WITH 26" ϕ GRATED COVER

Light Duty Grate



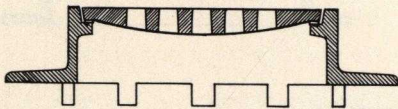
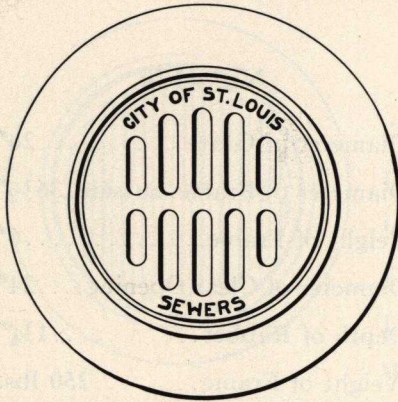
No. 4171

Diameter of Grate.....26"
 Diameter of Frame.....36 $\frac{1}{2}$ "
 Height of Frame.....6"
 Diameter of Clear Opening....24"
 Depth of Rabbet.....1 $\frac{1}{4}$ "
 Weight of Frame.....250 lbs.
 Weight of Grate.....105 lbs.



ROUND MANHOLE FRAME WITH GRADED COVER

Suitable for Heavy Traffic



No. 4795

Diameter of Grate..... $23\frac{5}{8}$ "

Diameter of Frame, outside... 37 "

Height of Frame..... 7 "

Clear Opening..... $22\frac{3}{4}$ "

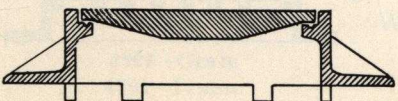
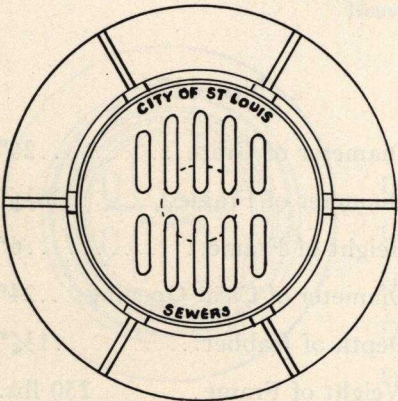
Depth of Rabbet..... $1\frac{1}{4}$ "

Weight of Grate.....147 lbs.

Weight of Frame.....230 lbs.

CITY OF ST. LOUIS ROUND MANHOLE FRAME WITH GRADED COVER

Suitable for Extra Heavy Traffic



No. 4798

Diameter of Grate..... $23\frac{1}{4}$ "

Diameter of Frame, outside. $37\frac{1}{2}$ "

Height of Frame..... 7 "

Clear Opening..... $21\frac{3}{8}$ "

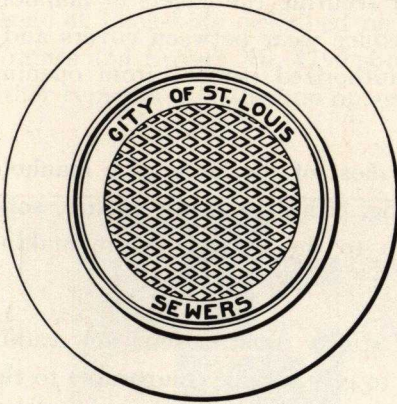
Depth of Rabbet..... $1\frac{1}{4}$ "

Weight of Grate.....153 lbs.

Weight of Frame.....240 lbs.

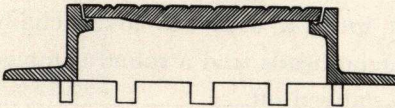
**ROUND MANHOLE FRAME WITH
SOLID COVER**

Suitable for Heavy Traffic



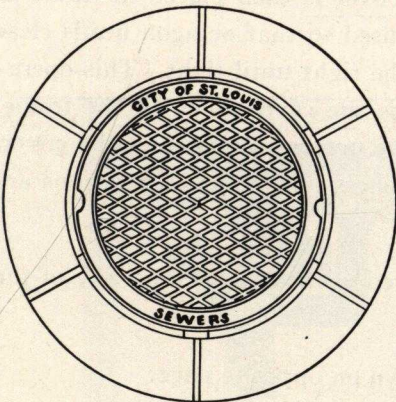
No. 4796

Diameter of Cover..... $23\frac{5}{8}$ "
 Diameter of Frame, outside... 37 "
 Height of Frame..... 7 "
 Clear Opening..... $22\frac{3}{4}$ "
 Depth of Rabbet..... $1\frac{1}{4}$ "
 Weight of Cover.....165 lbs.
 Weight of Frame.....230 lbs.



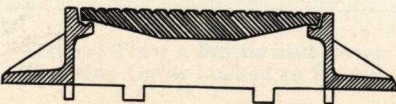
**CITY OF ST. LOUIS ROUND MANHOLE
FRAME WITH SOLID COVER**

Suitable for Extra Heavy Traffic



No. 4799

Diameter of Cover..... $23\frac{1}{4}$ "
 Diameter of Frame, outside. $37\frac{1}{2}$ "
 Height of Frame..... 7 "
 Clear Opening..... $21\frac{3}{8}$ "
 Depth of Rabbet..... $1\frac{1}{4}$ "
 Weight of Cover.....195 lbs.
 Weight of Frame.....240 lbs.



LOCK-LID

Lock-Lid is a unique locking device for securing the covers of manhole caps to frames to eliminate rattling, reduce wear between covers and frames, and to hinder children or unauthorized persons from opening manholes.

This locking device can be adapted to most of the larger size manhole frames and covers shown in this catalog, either round or square, solid or grated covers, by a simple addition to the pattern before making the mold.

All parts are made of Gray Iron and of sturdy construction, not readily affected by corrosion, and are designed to give service comparable to the life of the cover.

Locking device consists of brackets cast integral with the cover, chamfered square removable bolts having octagon heads, and a round cammed wedge washer having a part of one side slabbed off.

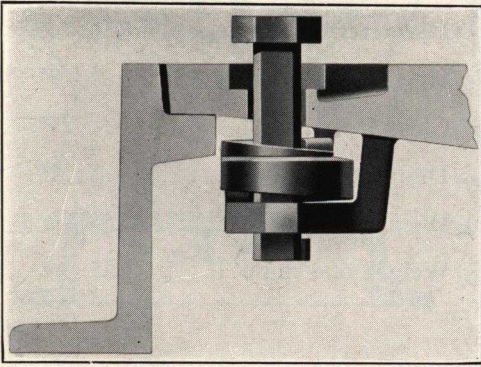
The method of operation is as follows: Before placing cover in frame, the lock bolts are turned to the left as far as possible. This sets wedge washers in a position to clear frame. Cover is then placed in frame in the regular way. Lock bolts are then raised so that octagon heads clear top of cover, and are then revolved to the right until tight. This operation raises the wedge washer and clamps the cover down to the frame. The lock bolts are then dropped into the octagon recesses in the cover. This secures tight position of wedge washers in service. Operations are reversed when removing the cover.

Covers can be secured and again removed without detaching any of the locking arrangement.

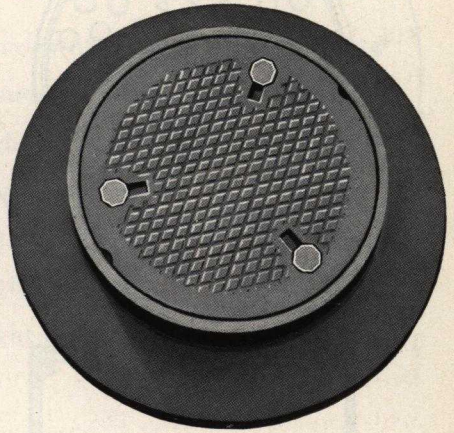
Details of Locking arrangement are shown on opposite page.

LOCK-LID

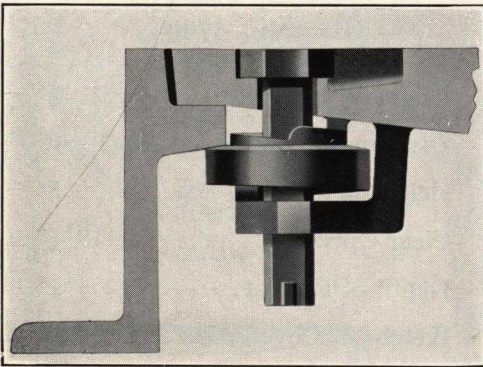
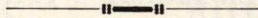
The cuts shown on this page show the details of the locking arrangement of Lock-Lids described on opposite page as adapted to Manhole Frames and Covers No. 4796 shown on page 9. Can also be adapted to other types as explained on opposite page.



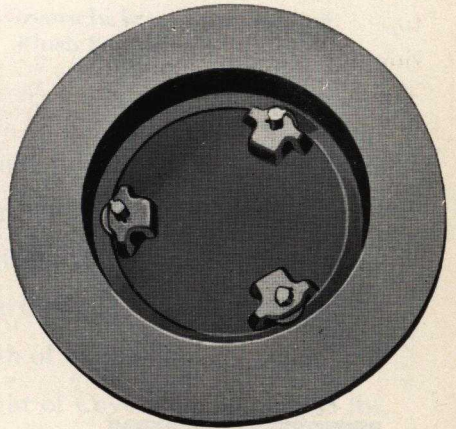
Section Thru a Frame and Cover
Showing Lock in Open Position



Top View of Manhole-Cap
Showing Location of Locks

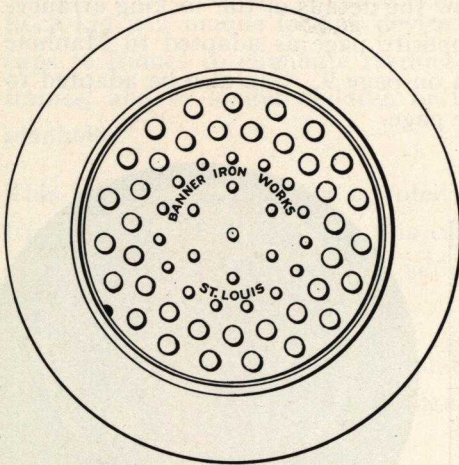


Section Thru a Frame and Cover
Showing Cover Locked to Frame



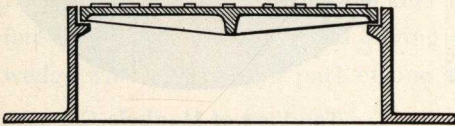
Bottom View of Manhole-Cap
Showing Cover Locks Gripping Frame

ROUND SUBURBAN STANDARD MANHOLE
FRAME WITH SOLID COVER



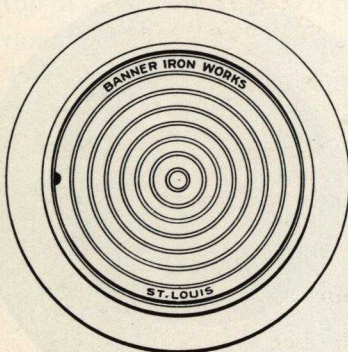
No. 4730

Diameter of Cover..... $23\frac{3}{4}$ "
 Diameter of Frame, outside...36"
 Height of Frame.....9"
 Clear Opening.....21"
 Depth of Rabbet.....1"
 Weight of Cover.....85 lbs.
 Weight of Frame.....255 lbs.



ROUND MANHOLE FRAME WITH SOLID COVER

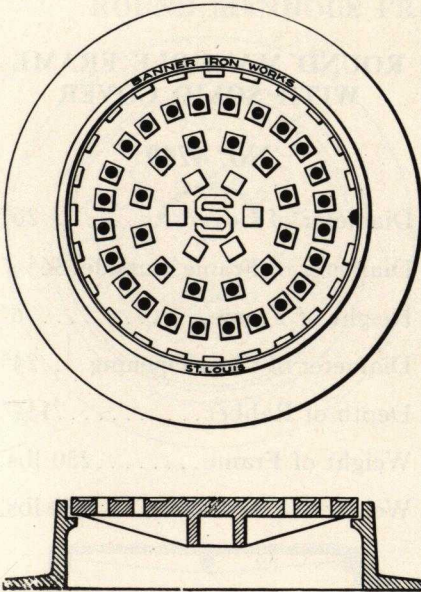
Park Type



No. 4790

Diameter of Cover..... $21\frac{1}{2}$ "
 Diameter of Frame, outside...30"
 Height of Frame.....5"
 Clear Opening..... $19\frac{1}{2}$ "
 Depth of Rabbet..... $1\frac{1}{4}$ "
 Weight of Cover.....97 lbs.
 Weight of Frame.....103 lbs.





**CITY OF EAST ST. LOUIS, ILL.,
STANDARD MANHOLE FRAME
WITH VENTILATED COVER**

No. 4183

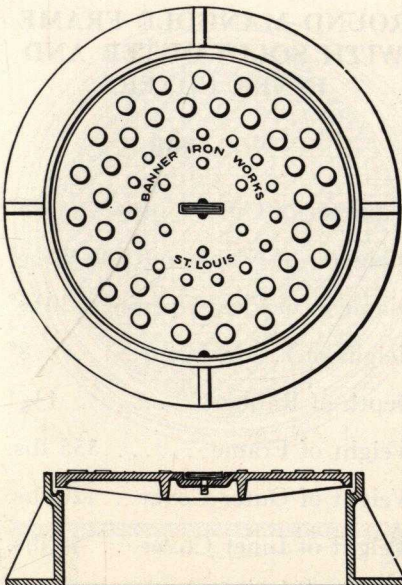
Solid Covers Can Also Be Furnished

Diameter of Cover.....	24"
Diameter of Frame, outside.....	34"
Height of Frame.....	7"
Clear Opening.....	20 $\frac{3}{4}$ "
Depth of Rabbet.....	1 $\frac{1}{4}$ "
Weight of Cover.....	150 lbs.
Weight of Frame.....	214 lbs.

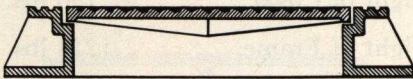
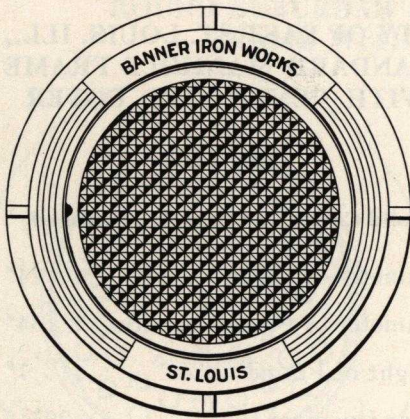
**ROUND MANHOLE FRAME
WITH SOLID COVER**

Groove In Frame For Packing
Flush Lift Handle On Cover

No. 4731



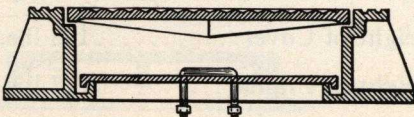
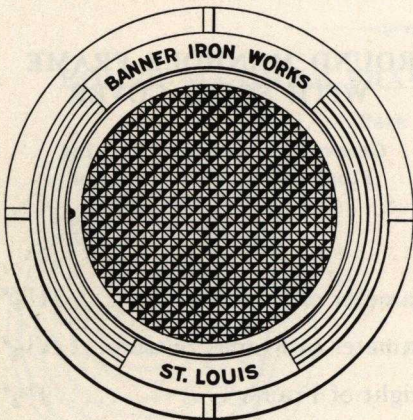
Diameter of Cover.....	24 $\frac{1}{4}$ "
Diameter of Frame, outside.....	31 $\frac{1}{2}$ "
Height of Frame.....	9 $\frac{1}{2}$ "
Clear Opening.....	22"
Depth of Rabbet.....	1 $\frac{1}{4}$ "
Weight of Cover.....	105 lbs.
Weight of Frame.....	177 lbs.



ROUND MANHOLE FRAME WITH SOLID COVER

No. 4740

Diameter of Cover.....26"
Diameter of Frame, outside. 36½"
Height of Frame.....6"
Diameter of Clear Opening....24"
Depth of Rabbet.....1¼"
Weight of Frame.....250 lbs.
Weight of Cover.....120 lbs.



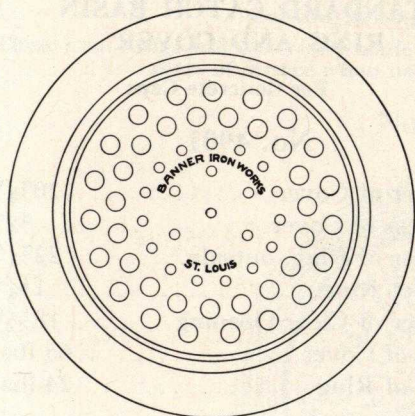
ROUND MANHOLE FRAME WITH SOLID OUTER AND INNER COVERS

No. 4800

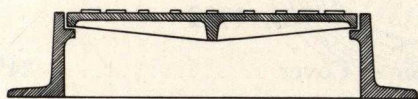
Diameter of Outer Cover.....26"
Diameter of Frame, outside. 36½"
Diameter of Clear Opening...20½"
Height of Frame.....8"
Depth of Rabbet.....1¼"
Weight of Frame.....355 lbs.
Weight of Outer Cover...120 lbs.
Weight of Inner Cover...45 lbs.

ROUND MANHOLE FRAME WITH SOLID COVER

No. 4732

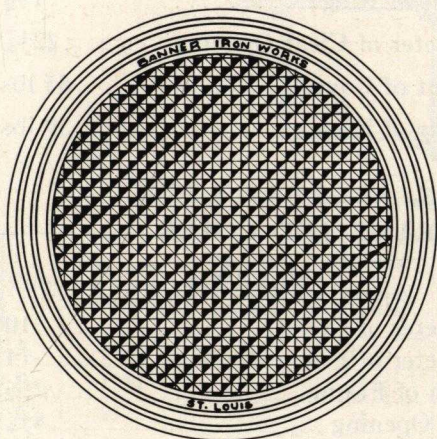


Diameter of Cover..... $23\frac{3}{4}$ "
 Diameter of Frame, outside...34"
 Height of Frame.....7"
 Clear Opening..... $20\frac{3}{4}$ "
 Depth of Rabbet..... $1\frac{1}{4}$ "
 Weight of Cover.....85 lbs.
 Weight of Frame.....214 lbs.

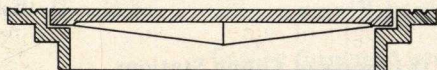


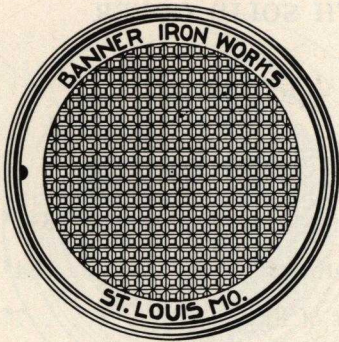
ROUND MANHOLE FRAME WITH 26" ϕ SOLID COVER

No. 4733



Diameter of Cover.....26"
 Diameter of Frame, outside...30"
 Depth of Frame.....4"
 Clear Opening..... $24\frac{1}{4}$ "
 Depth of Rabbet..... $1\frac{1}{4}$ "
 Weight of Cover.....120 lbs.
 Weight of Frame.....95 lbs.





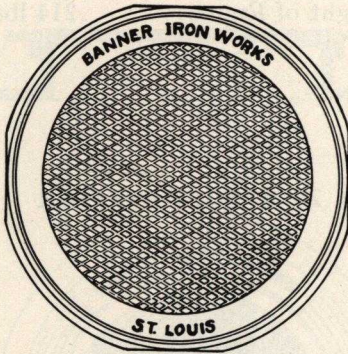
CITY OF EAST ST. LOUIS, ILL.,
STANDARD CATCH BASIN
RING AND COVER

For Concrete Caps

No. 4901

Diameter of Cover.....	20 $\frac{3}{4}$ "
Thickness of Cover.....	$\frac{3}{4}$ "
Diameter of Ring, outside.....	22 $\frac{3}{4}$ "
Height of Ring.....	1 $\frac{1}{4}$ "
Diameter of Clear Opening.....	18 $\frac{1}{2}$ "
Weight of Cover.....	65 lbs.
Weight of Ring.....	24 lbs.

ROUND CATCH BASIN RING AND 24" ϕ COVER



No. 4902

Diameter of Cover.....	24"
Thickness of Cover.....	$\frac{3}{4}$ "
Diameter of Ring, outside.....	26 $\frac{1}{4}$ "
Height of Ring.....	1 $\frac{1}{2}$ "
Diameter of Clear Opening.....	22 $\frac{1}{4}$ "
Weight of Cover.....	85 lbs.
Weight of Ring.....	39 lbs.

ROUND FILL CAP FRAME AND COVER



No. 4903

Diameter of Cover.....	10"
Diameter of Frame, outside.....	14"
Depth of Frame.....	2 $\frac{1}{2}$ "
Clear Opening.....	8 $\frac{3}{4}$ "
Depth of Rabbet.....	1 $\frac{1}{4}$ "
Weight of Cover.....	25 lbs.
Weight of Frame.....	21 lbs.

Excellent to Cover Fill Caps in Driveways of Filling Stations

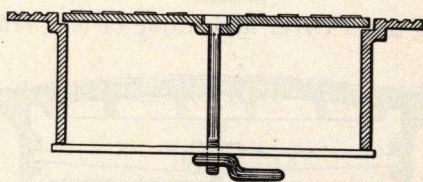
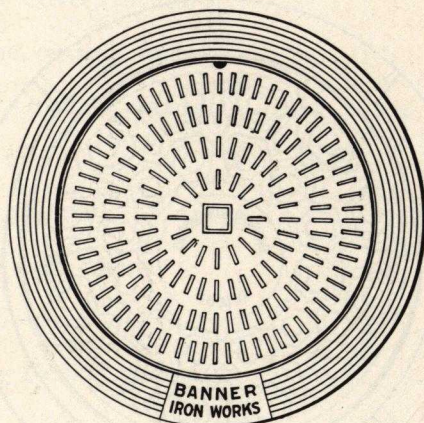
BANNER IRON WORKS

COAL RINGS WITH SOLID COVERS

Locking Arrangement Underneath

These Coal Rings and Covers are made of heavy Metal Sections and will give many years of service when used under ordinary conditions

No. 4140



TYPE E & F COVERS ARE RIBBED UNDERNEATH

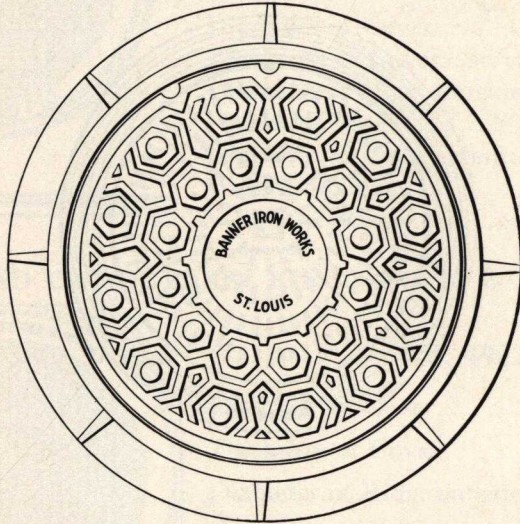
Type	Diameter of Cover (Inches)	Diameter of Ring Outside (Inches)	Diameter of Opening (Inches)	Depth of Ring (Inches)	Depth of Rabbet (Inches)	Weight of Cover (Pounds)	Weight of Ring (Pounds)
A	19 $\frac{1}{4}$	25 $\frac{1}{2}$	17 $\frac{1}{2}$	4 $\frac{3}{4}$	$\frac{5}{8}$	50	75
B	19 $\frac{1}{4}$	25 $\frac{1}{2}$	17 $\frac{1}{2}$	8	$\frac{5}{8}$	50	95
C	25	31 $\frac{1}{2}$	24	4	$\frac{5}{8}$	95	80
D	25	31 $\frac{1}{2}$	24	8	$\frac{5}{8}$	95	118
E	31 $\frac{1}{4}$	37 $\frac{1}{2}$	30	7	$\frac{5}{8}$	160	175
F	35 $\frac{3}{4}$	40	35	6	$\frac{5}{8}$	280	200

Can be furnished without locking device

**ROUND MANHOLE FRAMES WITH SOLID
COVERS**

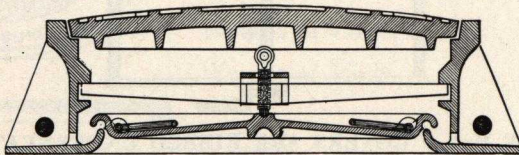
No. 4761—Frame With Outer and Inner Covers
Inner Cover Has Locking Device

No. 4762—Frame With Outer Cover Only
Outer Covers Can Be Furnished With Ventilating Holes When Desired



Plan showing outer cover and frame of No. 4761 and 4762

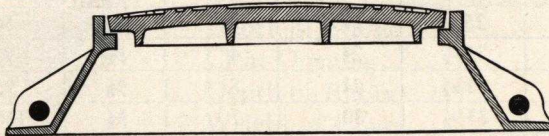
Type "A"



SECTION THRU No. 4761

A $\frac{3}{4}$ " diameter rubber gasket can be placed between the inner cover and the frame

Type "B"



SECTION THRU No. 4762

See Page 19 for Dimensions and Weights of above

DIMENSIONS AND WEIGHTS

No. 4761

	TYPE "A"	
	27"	30"
Diameter of Outer Cover, Inches.....	33½	36½
Diameter of Frame, outside, inches.....	43½	46½
Diameter of Clear Opening, inches.....	27	30
Height of Frame, inches.....	11	11
Weight of Frame, pounds.....	565	585
Weight of Outer Cover, pounds.....	390	455
Weight of Inner Cover, pounds.....	123	163
Weight of Locking Device, pounds.....	23	25



DIMENSIONS AND WEIGHTS

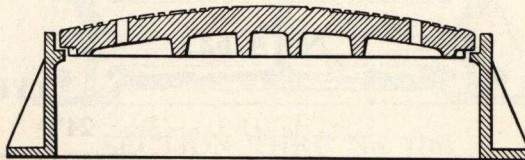
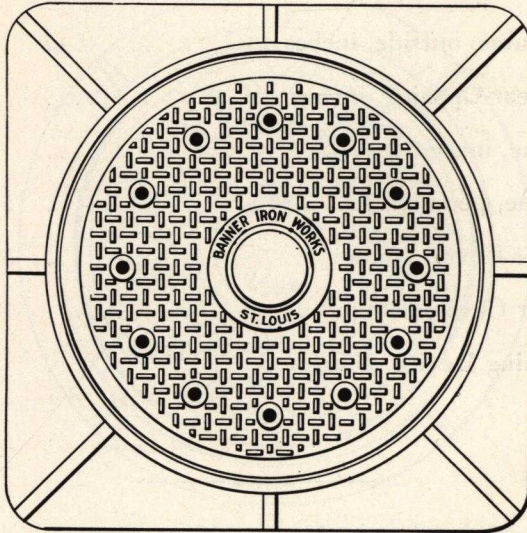
No. 4762

	TYPE "B"		
	24"	27"	30"
Diameter of Cover, inches.....	25¾	28¾	31¾
Diameter of Frame, outside, inches.....	43	46	49
Diameter of Clear Opening, inches.....	24	27	30
Height of Frame, inches.....	10	10	10
Weight of Frame, pounds.....	360	365	411
Weight of Cover, pounds.....	190	285	339

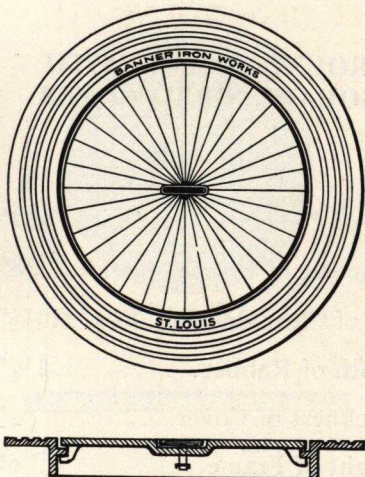
SQUARE MANHOLE FRAME WITH ROUND
VENTILATED COVER
SUITABLE FOR EXTRA HEAVY TRAFFIC

No. 4760

Solid Cover Can Also Be Furnished



Diameter of Cover.....	34 $\frac{1}{4}$ "
Size of Frame, outside.....	42 $\frac{1}{2}$ "x42 $\frac{1}{2}$ "
Height of Frame.....	10"
Diameter of Clear Opening.....	31 $\frac{5}{8}$ "
Depth of Rabbet.....	1 $\frac{1}{2}$ "
Weight of Cover.....	400 lbs.
Weight of Frame.....	540 lbs.



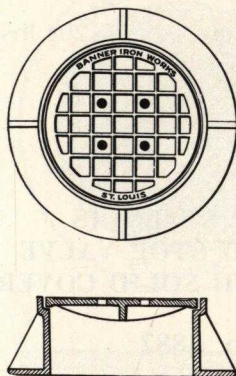
CISTERN RINGS WITH SOLID COVERS

Flush Lift Handle On Cover

No. 4150

Note—Turning of handle secures cover to frame.

Diameter of Cover, inches.....	18	21
Diameter of Frame, outside, inches.....	27	30
Depth of Frame, inches..	3	3
Diameter of Clear Opening, inches.....	17 $\frac{1}{4}$	19 $\frac{3}{4}$
Weight of Cover, pounds.	19	35
Weight of Frame, pounds	37	46

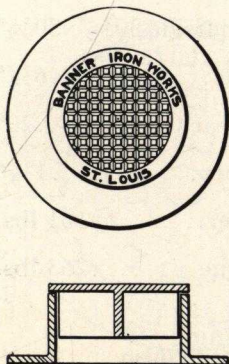


ROUND LAMPHOLE FRAME WITH VENTILATED COVER

No. 4890

Solid Cover Can Also Be Furnished

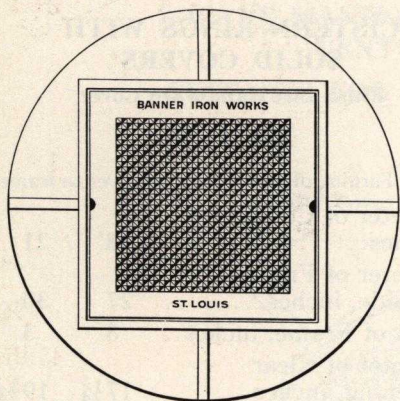
Diameter of Cover.....	15 $\frac{1}{4}$ "
Diameter of Frame, outside.....	23"
Height of Frame.....	8"
Diameter of Clear Opening.....	14 $\frac{7}{8}$ "
Weight of Cover.....	35 lbs.
Weight of Frame.....	85 lbs.



ROUND LAMPHOLE FRAME WITH SOLID COVER

No. 4891

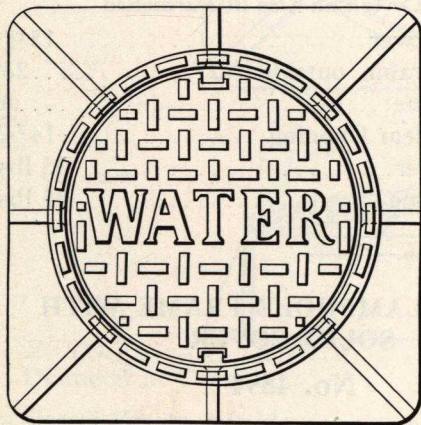
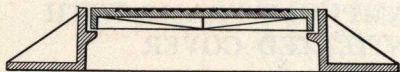
Diameter of Cover.....	9"
Diameter of Frame, outside.....	14 $\frac{1}{4}$ "
Height of Frame.....	7"
Diameter of Clear Opening.....	8"
Weight of Cover.....	25 lbs.
Weight of Frame.....	45 lbs.



ROUND FRAME WITH SQUARE SOLID COVER

No. 4840

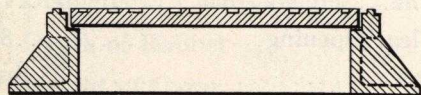
Size of Cover.....22"x22"
 Diameter of Frame, outside...38"
 Size of Clear Opening. 20½"x20½"
 Depth of Rabbet.....2¼"
 Thickness of Cover.....¾"
 Height of Frame.....6"
 Weight of Cover.....128 lbs.
 Weight of Frame.....208 lbs.



CITY OF ST. LOUIS STANDARD STOP VALVE FRAME WITH SOLID COVER

No. 4882

Diameter of Cover.....21¾"
 Size of Frame, outside 30½"x30½"
 Depth of Frame.....6¼"
 Diameter of Clear Opening...20"
 Depth of Rabbet.....1¼"
 Weight of Cover.....101 lbs.
 Weight of Frame.....263 lbs.

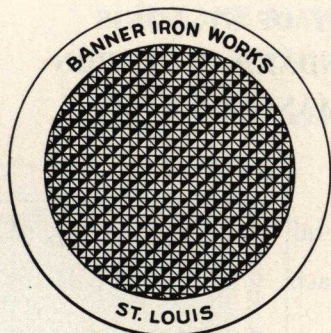


Bearing Surfaces of Frame and Cover are Machined Finish

CITY OF ST. LOUIS STANDARD INLET COVER

For Stone or Concrete Caps

No. 4900



Diameter of Cover.....24"

Thickness of Cover..... $\frac{3}{4}$ "

Weight, each.....85 lbs.

ROUND INLET COVERS

For Stone or Concrete Caps

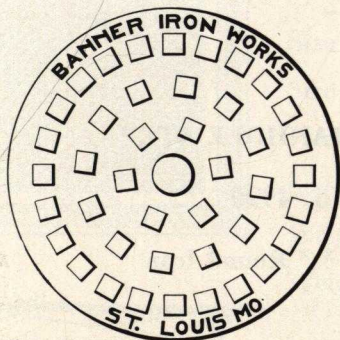
No. 4904



Diameter of Cover (Inches)	Thickness of Cover (Inches)	Weight of Cover (Pounds)
19	$1\frac{3}{4}$	123
20	1	82

ROUND INLET COVER

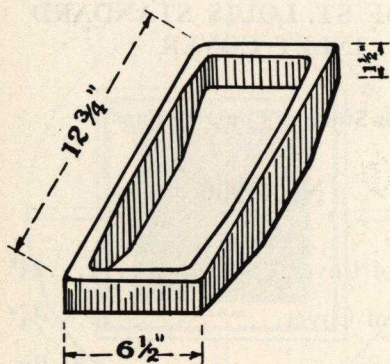
No. 4905



Diameter of Cover..... $22\frac{3}{4}$ "

Thickness of Cover..... $1\frac{1}{4}$ "

Weight, each.....146 lbs.

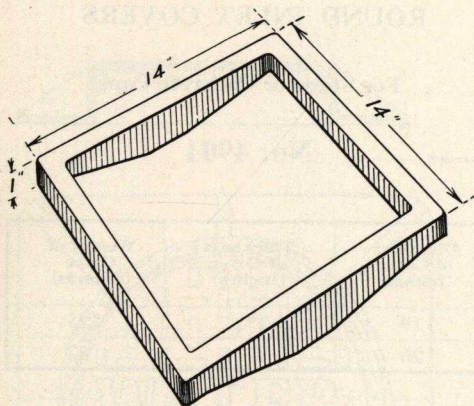


CITY OF ST. LOUIS
STANDARD CAST IRON
MANHOLE STEP

No. 4922

Metal 5/8" to 3/4" Thick

Weight, each.....11 lbs.

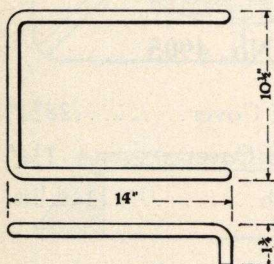
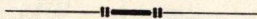


CITY OF ST. LOUIS
STANDARD CAST IRON
TUNNEL SHAFT STEP

No. 4923

Metal 1" Thick

Weight, each.....17 lbs.



STEEL MANHOLE STEP

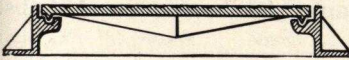
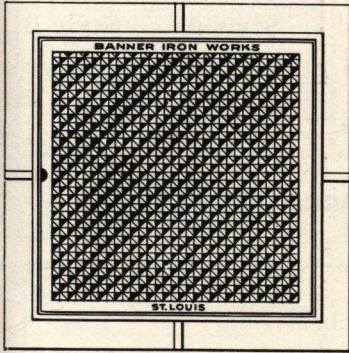
No. 4920

Made of 3/4" Round Iron

Weight, each5 lbs.

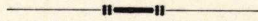
**SQUARE MANHOLE FRAME WITH
24"x24" SOLID COVER**

Groove in Frame for Packing



No. 4780

Size of Cover.....24"x24"
Size of Frame, outside.....30"x30"
Height of Frame.....4"
Size of Clear Opening.....20 $\frac{3}{4}$ "x20 $\frac{3}{4}$ "
Weight of Cover.....125 lbs.
Weight of Frame.....125 lbs.



**SQUARE MANHOLE FRAME WITH
20"x20" SOLID COVER**

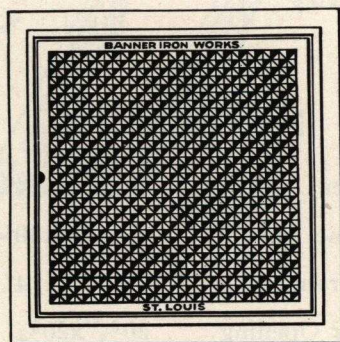
Groove in Frame for Packing



No. 4781

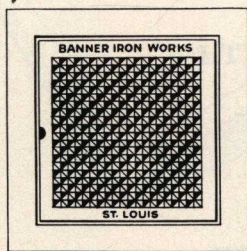
Size of Cover.....20"x20"
Size of Frame, outside.....24"x24"
Height of Frame.....3"
Size of Clear Opening.....17 $\frac{1}{2}$ "x17 $\frac{1}{2}$ "
Weight of Cover.....50 lbs.
Weight of Frame.....66 lbs.

SQUARE METER FRAMES WITH
SOLID COVERS



No. 4610

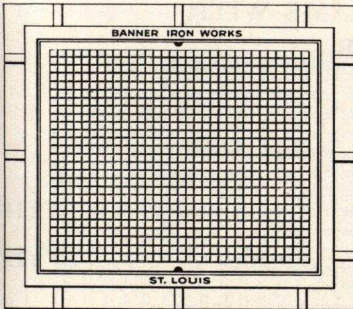
	Style A	Style B
Size of Cover...	24"x24"	30"x30"
Size of Frame, outside.....	29"x29"	36"x36"
Height of Frame	2½"	3"
Size of Clear Opening.....	22½"x22½"	28½"x28½"
Depth of Rabbet	¾"	¾"
Weight of Cover	87 lbs.	135 lbs.
Weight of Frame	82 lbs.	114 lbs.



SQUARE CLEANOUT FRAMES
WITH SOLID COVERS

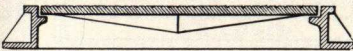
No. 4620

Style	Size of Cover (Inches)	Size of Frame Outside (Inches)	Height of Frame (Inches)	Size of Clear Opening (Inches)	Depth of Rabbet (Inches)	Weight of Cover (Pounds)	Weight of Frame (Pounds)
A	13x13	17x17	2½	12x12	⅝	20	29
B	16x16	20x20	2½	15x15	⅝	32	48
C	19x19	23x23	2½	18x18	⅝	45	48
D	37¼x37¼	40½x40½	2½	36x36	⅝	192	101

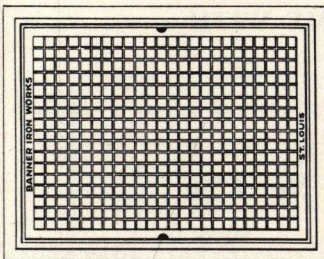


RECTANGULAR MANHOLE
FRAMES WITH SOLID
COVERS

No. 4770

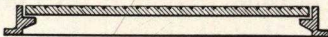


Style	Size of Cover (Inches)	Size of Frame Outside (Inches)	Height of Frame (Inches)	Size of Clear Opening (Inches)	Depth of Rabbet (Inches)	Weight of Cover (Pounds)	Weight of Frame (Pounds)
A	18x18	22x22	4	16x16	1	70	112
B	24x24	30x30	4	22x22	1	141	138
C	30x24	36x30	4	28x22	1	175	152
D	30x30	36x36	4	28x28	1	208	173



RECTANGULAR MANHOLE
FRAMES WITH SOLID
COVERS

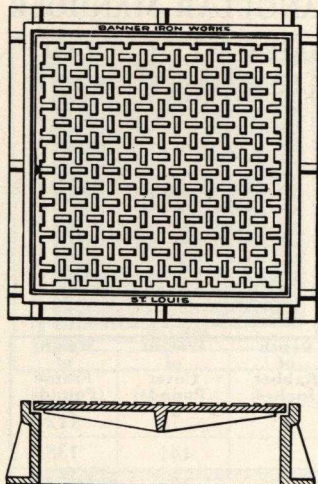
No. 4771



Note—*For Style "E", covers are made in two sections.

Style	Size of Cover (Inches)	Size of Frame Outside (Inches)	Height of Frame (Inches)	Size of Clear Opening (Inches)	Depth of Rabbet (Inches)	Weight of Cover (Pounds)	Weight of Frame (Pounds)
A	18x18	21x21	2½	15¾x15¾	1	72	50
B	24x18	27x21	2½	22x16	1	100	66
C	30x24	33x27	2½	28x22	1	140	75
D	36x12	39x15	2½	34x10	1	110	61
E*	72x30	75x33	2½	70x28	1	270	148

SQUARE MANHOLE FRAME WITH SOLID COVER

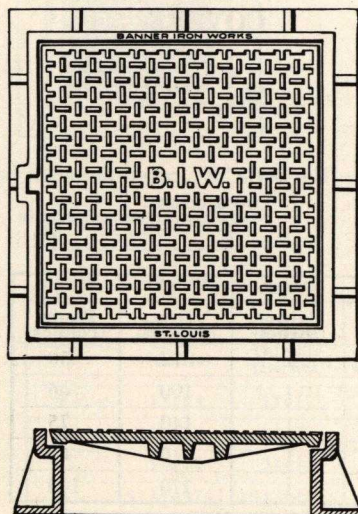


No. 4600

Size of Cover.....	24"x24"
Size of Frame, outside.....	29"x29"
Height of Frame.....	8"
Size of Clear Opening.....	21 $\frac{3}{4}$ "x21 $\frac{3}{4}$ "
Depth of Rabbet.....	1 $\frac{1}{8}$ "
Weight of Cover.....	175 lbs.
Weight of Frame.....	260 lbs.

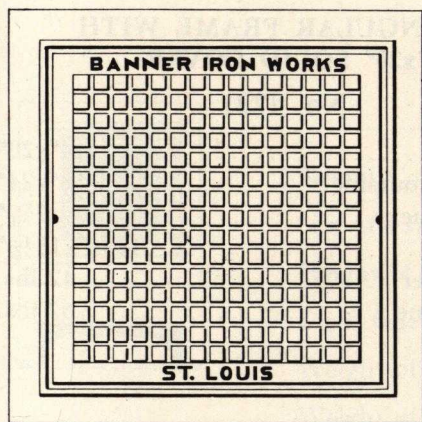


SQUARE MANHOLE FRAME WITH SOLID COVER



No. 4750

Size of Cover.....	28 $\frac{1}{2}$ "x28 $\frac{1}{2}$ "
Size of Frame, outside.....	36"x36"
Height of Frame.....	9"
Size of Clear Opening.....	26"x26"
Depth of Rabbet.....	1 $\frac{1}{2}$ "
Weight of Cover.....	244 lbs.
Weight of Frame.....	451 lbs.



SQUARE MANHOLE FRAME WITH SOLID COVER

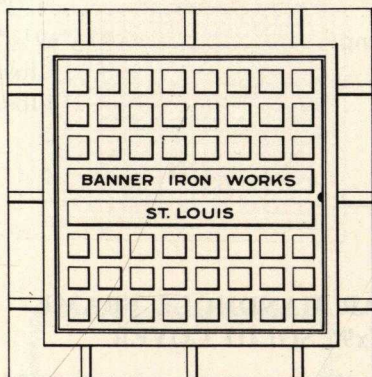
No. 4883

Size of Cover.....38"x38"
 Size of Frame, outside 44 $\frac{1}{4}$ "x44 $\frac{1}{4}$ "
 Depth of Frame.....4"
 Size of Clear Opening.36 $\frac{1}{2}$ "x36 $\frac{1}{2}$ "
 Depth of Rabbet.....1"
 Weight of Cover.....395 lbs.
 Weight of Frame.....228 lbs.

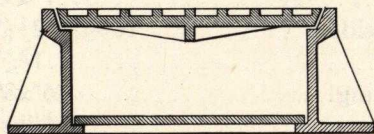


SQUARE MANHOLE FRAMES WITH SOLID INNER AND OUTER COVERS

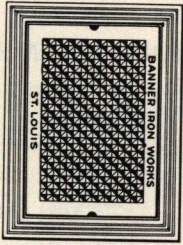
No. 4801



	Style A	Style B
Size of Outer Cover.....	22 $\frac{1}{2}$ "x22 $\frac{1}{2}$ "	22 $\frac{1}{2}$ "x22 $\frac{1}{2}$ "
Size of Inner Cover.....		19 $\frac{1}{2}$ "x19 $\frac{1}{2}$ "
Size of Frame, outside.....	31"x31"	31"x31"
Height of Frame.....	4 $\frac{1}{2}$ "	10 $\frac{1}{2}$ "
Size of Clear Opening....	18"x18"	18"x18"
Depth of Rabbet....	1 $\frac{5}{8}$ "	1 $\frac{5}{8}$ "
Weight of Outer Cover... ..	140 lbs.	140 lbs.
Weight of Inner Cover..		70 lbs.
Weight of Frame.....	235 lbs.	430 lbs.



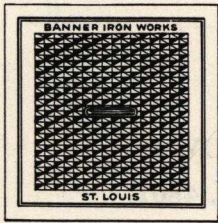
Note—Style "A" not arranged for inner cover.



**RECTANGULAR FRAME WITH
14"x20" SOLID COVER**

No. 4721

Size of Cover.....	14"x20"
Size of Frame, outside.....	18"x24"
Height of Frame.....	2 ³ / ₄ "
Clear Opening.....	12 ¹ / ₂ "x18 ¹ / ₂ "
Weight of Cover.....	42 lbs.
Weight of Frame.....	62 lbs.

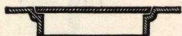
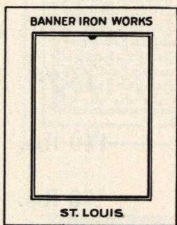


**SQUARE HANDHOLE FRAME WITH
13"x13" SOLID COVER**

Flush Lift Handle

No. 4880

Size of Cover.....	13"x13"
Size of Frame, outside.....	14 ³ / ₄ "x14 ³ / ₄ "
Depth of Frame.....	2"
Size of Clear Opening.....	9 ¹ / ₂ "x9 ¹ / ₂ "
Weight of Cover.....	15 lbs.
Weight of Frame.....	15 lbs.



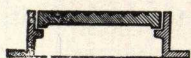
**RECTANGULAR HANDHOLE FRAME
WITH 7"x9" SOLID COVER**

No. 4881

Size of Cover.....	7"x9"
Size of Frame, outside.....	10 ¹ / ₂ "x12 ¹ / ₂ "
Depth of Frame.....	1 ³ / ₄ "
Size of Clear Opening.....	6"x8"
Weight of Cover.....	4 lbs.
Weight of Frame.....	10 lbs.

**SQUARE FRAME WITH
13"x13" SOLID COVER**

No. 4853

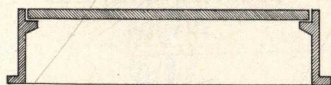
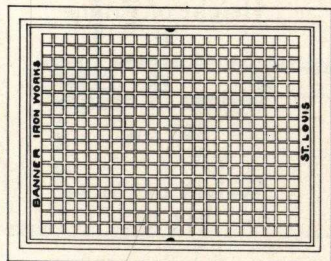


Size of Cover.....	13"x13"
Size of Frame, outside.....	18"x18"
Height of Frame.....	4½"
Clear Opening.....	12"x12"
Weight of Cover.....	33 lbs.
Weight of Frame.....	54 lbs.



**RECTANGULAR MANHOLE FRAME
WITH 30"x24" SOLID COVER**

No. 4772



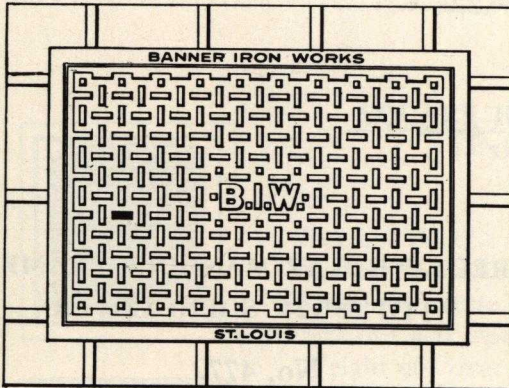
Size of Cover.....	30"x24"
Size of Frame, outside.....	33"x27"
Depth of Frame.....	6"
Clear Opening.....	28"x22"
Weight of Cover.....	110 lbs.
Weight of Frame.....	128 lbs.

MANHOLE FRAME WITH BALANCED COVER

No. 4975 as shown below and No. 4985 as shown on opposite page 33, are used as the Standard Cover for Gas Main and Wire Conduit Pits, and Manholes for Water and Sewer Systems, requiring ready accessibility. They are particularly adapted for use in streets subject to heavy traffic.

The Covers are readily opened by one man by means of a key, which releases the gravity catch and then forms a handle. When open, the Cover is held in a vertical position by a counterweight which is adjusted on a shaft with lever arms. Length of shaft is made to conform to width of pit.

No. 4975 (small size)



Size of Cover
21½"x31½"

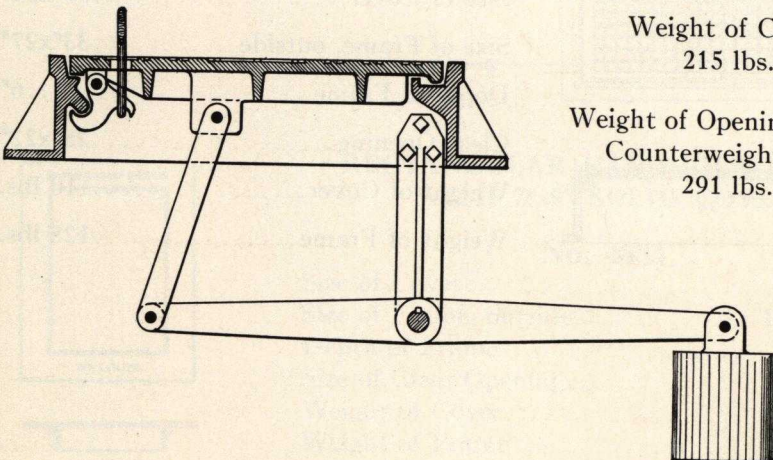
Size of Frame, outside
29½"x39½"

Height of Frame
8"

Weight of Frame
395 lbs.

Weight of Cover
215 lbs.

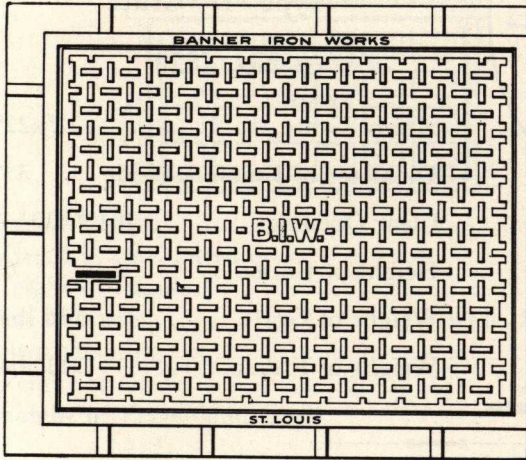
Weight of Opening Device
Counterweight, Etc.
291 lbs.



BANNER IRON WORKS

MANHOLE FRAME WITH
BALANCED COVER

No. 4985 (large size)



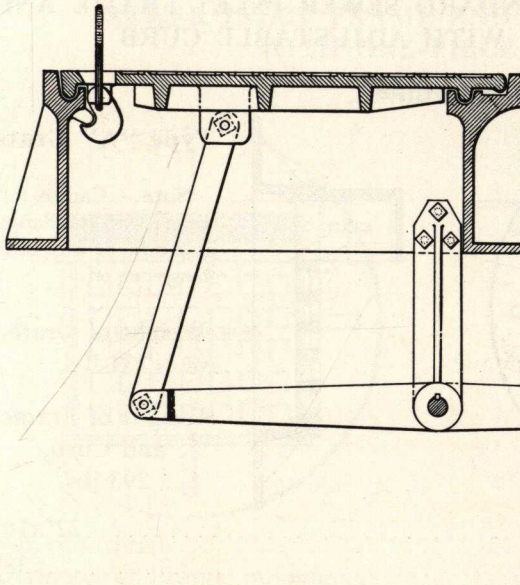
Size of Cover
 $27\frac{3}{4}" \times 34\frac{1}{4}"$

Size of Frame, outside
 $35\frac{1}{2}" \times 39\frac{1}{2}"$

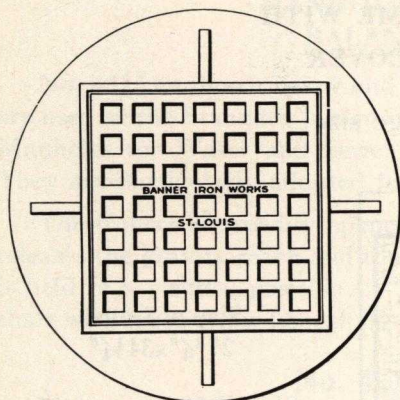
Height of Frame
14"

Weight of Frame
708 lbs.

Weight of Cover
306 lbs.



Weight of Opening Device
Counterweight, Etc.
342 lbs.



**CITY OF ST. LOUIS
STANDARD SEWER INLET
FRAME WITH GRATED
COVER**

Type "D" Grate

No. 4820

Size of Grate.....22"x22"

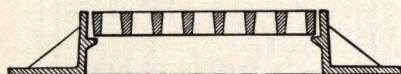
Diameter of Frame, outside.....38"

Clear Opening.....20½"x20½"

Height of Frame.....6"

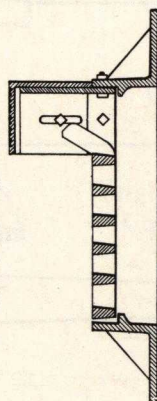
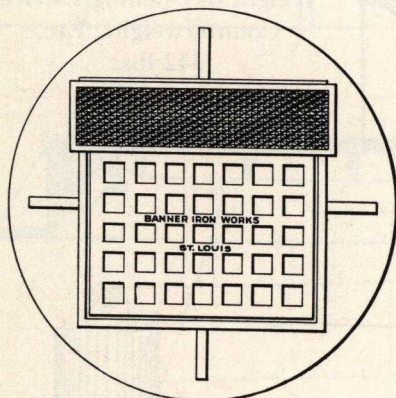
Weight of Grate.....156 lbs.

Weight of Frame.....211 lbs.



**CITY OF ST. LOUIS STANDARD SEWER INLET FRAME AND
GRATED COVER WITH ADJUSTABLE CURB**

No. 4830



Type "A" Grate

Note — Can be furnished with full flange, as shown, or with back flange cut off.

Weight of Grate,
131 lbs.

Weight of Frame
and Curb,
293 lbs.

Size of Grate.....22"x16"

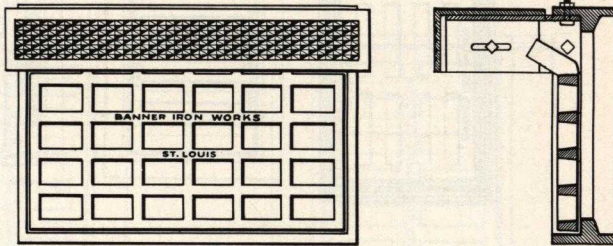
Diameter of Frame, outside.....38"

Height of Frame.....6"

Size of Curb.....6" wide, 8" high above frame, 25¾" long

**RECTANGULAR SEWER INLET FRAME AND GRATED COVER
WITH ADJUSTABLE CURB**

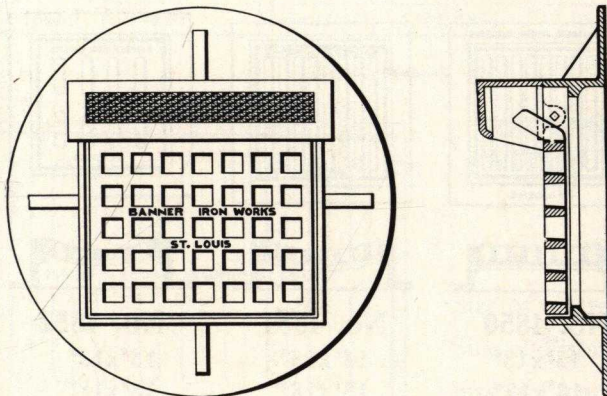
No. 4831



Size of Grate.....	24½"x12"
Size of Frame, outside.....	26"x18"
Height of Frame.....	5"
Size of Curb.....	5" wide, 8" high above frame, 28" long
Clear Opening.....	14"x22"
Weight of Grate.....	56 lbs.
Weight of Frame and Curb.....	187 lbs.

**SEWER INLET FRAME AND GRATED COVER
WITH ONE-PIECE CURB**

No. 4841



Note — Can be furnished with full flange, as shown, or with back flange cut off.

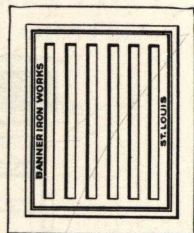
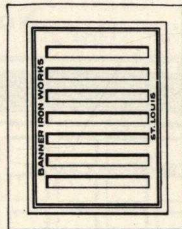
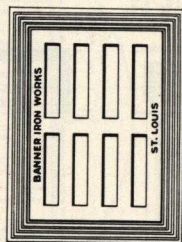
Weight of Grate,
131 lbs.

Weight of Frame
and Curb,
260 lbs.

Size of Grate.....	22"x16"
Diameter of Frame, outside.....	38"
Height of Frame.....	6"
Size of Curb.....	7" wide, 6" high above frame, 25" long

BANNER IRON WORKS

RECTANGULAR FRAMES WITH FLAT AND CONCAVE GRATES



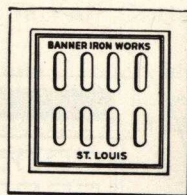
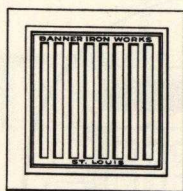
No. 4720

No. 4854

No. 4855

Size of Grate.....	14"x20"	14"x18"	14"x18"
Size of Frame, outside	18"x24"	19"x23"	19"x23"
Height of Frame....	2 $\frac{3}{4}$ "	4 $\frac{1}{2}$ "	4 $\frac{1}{2}$ "
Clear Opening.....	12 $\frac{1}{2}$ "x18 $\frac{1}{2}$ "	12"x16"	12"x16"
Weight of Grate.....	42 lbs.	40 lbs.	45 lbs.
Weight of Frame....	62 lbs.	76 lbs.	76 lbs.

SQUARE FRAMES WITH FLAT AND CONCAVE GRATES 13"x13"



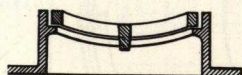
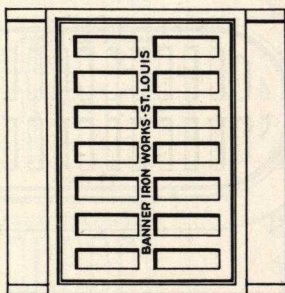
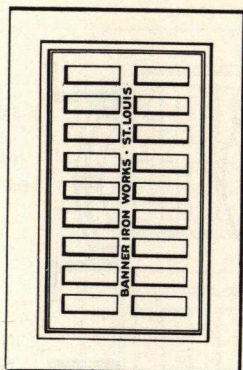
No. 4850

No. 4851

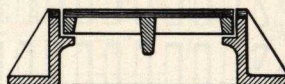
No. 4852

Size of Grate.....	13"x13"	13"x13"	13"x13"
Size of Frame, outside	18"x18"	18"x18"	18"x18"
Height of Frame....	4 $\frac{1}{2}$ "	4 $\frac{1}{2}$ "	4 $\frac{1}{2}$ "
Clear Opening.....	12"x12"	12"x12"	12"x12"
Weight of Grate.....	27 lbs.	38 lbs.	54 lbs.
Weight of Frame....	54 lbs.	54 lbs.	54 lbs.

RECTANGULAR FRAMES WITH
CONCAVE GRATES

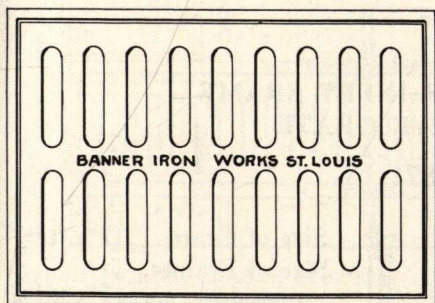


No. 4860



No. 4861

Style No.	Size of Grate (Inches)	Size of Frame Outside (Inches)	Clear Opening (Inches)	Height of Frame (Inches)	Weight of Grate (Pounds)	Weight of Frame (Pounds)
4860	14x26	23x34½	12½x24½	6	86	132
4861	14x20	21½x22	12¾x18¾	6	70	128



RECTANGULAR FRAME
WITH GRATED 24"x36"
COVER

No. 4569

Size of Grate.....24"x36"
Size of Frame, over all....26"x38"
Size of Clear Opening.....21"x33"
Height of Frame.....2"
Weight of Grate.....252 lbs.
Weight of Frame.....107 lbs.

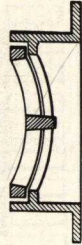
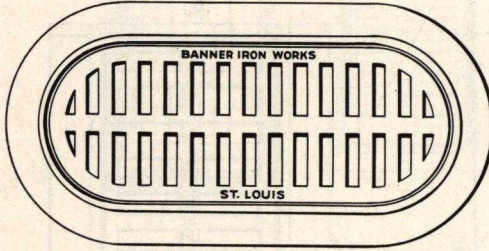


BANNER IRON WORKS

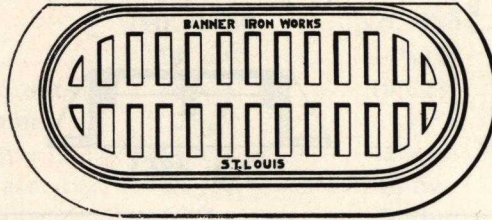
OVAL GUTTER INLET FRAMES WITH CONCAVE GRATES

No. 4870

STYLE
"A"
Full
Flange



STYLE
"B"
One
Flange
Cut Off

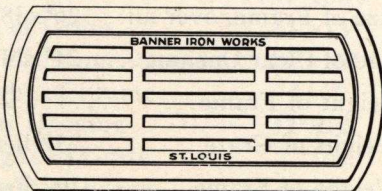


Style	Size of Grate (Inches)	Size of Frame (Inches)	Height of Frame (Inches)	Weight of Grate (Pounds)	Weight of Frame (Pounds)
A	15x39	47x23	7	114	175
B	15x39	47x19 $\frac{7}{8}$	7	114	154



SEGMENT GUTTER INLET FRAME WITH CONCAVE GRATE

No. 4871



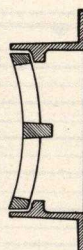
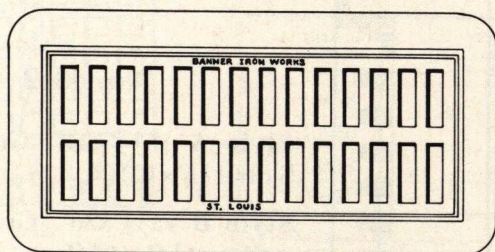
Size of Grate...12"x31 $\frac{1}{2}$ "
Size of Frame,
outside.....17"x36 $\frac{1}{2}$ "
Height of Frame....2 $\frac{3}{4}$ "
Weight of Grate... 50 lbs.
Weight of Frame..110 lbs.

GUTTER INLET FRAMES WITH RECTANGULAR CONCAVE GRATES

No. 4872

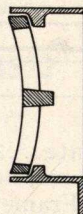
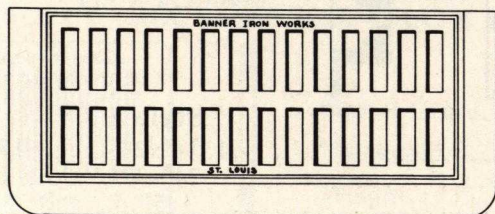
STYLE
"A"

Full
Flange



STYLE
"B"

Back
Flange
Omitted



Style	Size of Grate (Inches)	Size of Frame (Inches)	Height of Frame (Inches)	Weight of Grate (Pounds)	Weight of Frame (Pounds)
A	15x39	47x23	7	138	202
B	15x39	47x19 ⁷ / ₈	7	138	183

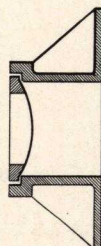
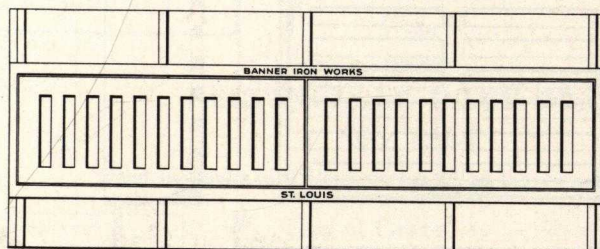
— II — II —

RECTANGULAR FRAME WITH GRATED COVER

For Railway Track Drains

No. 4950

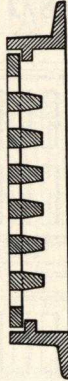
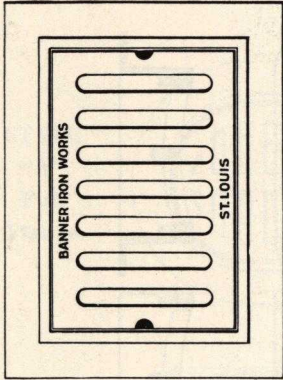
Grate In Two Sections



Size of Double Grates, over all.....	9"x48"
Size of Frame, outside.....	20"x50"
Height of Frame.....	7 ⁷ / ₈ "
Two Clear Openings, each.....	8"x23 ¹ / ₂ "
Weight of Double Grates.....	103 lbs.
Weight of Frame.....	353 lbs.

GUTTER INLET FRAME WITH GRATED COVER

(Made in two sizes)



No. 4862

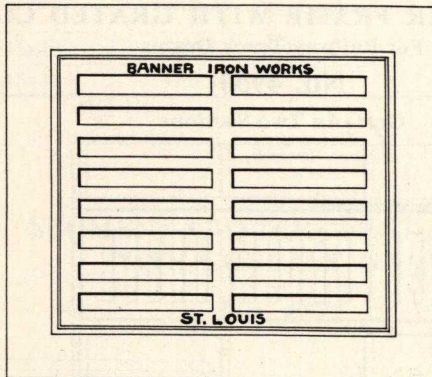
Style A 15½"x24". Grate has 7 Slots 1½"x10¾".

Style B 15½"x36". Grate has 11 Slots 1½"x10¾".

	Style A	Style B
Size of Grate.....	15½"x24"	15½"x36"
Size of Frame, outside.....	24"x32"	24"x44½"
Height of Frame.....	5"	5"
Clear Opening.....	14"x22½"	14"x36½"
Weight of Grate.....	105 lbs.	172 lbs.
Weight of Frame.....	210 lbs.	256 lbs.



RECTANGULAR FRAME WITH 20¾"x25½" GRATED COVER

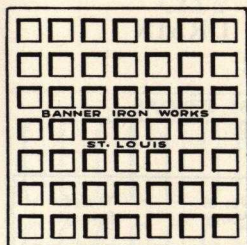


No. 4865

Size of Grates.....	20¾"x25½"	No. of Slots.....	16
Size of Frame, outside....	30"x35"	Size of Slots.....	1½"x11⅛"
Height of Frame.....	7¾"	Weight of Grate.....	81 lbs.
Clear Opening.....	20"x25"	Weight of Frame.....	188 lbs.

SQUARE GRATES 1" THICK

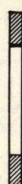
No. 4571



Size of Grate (Inches)	Thickness of Grate (Inches)	Weight Each (Pounds)
8x 8	1	9
10x10	1	14
12x12	1	20
20x20	1	53

RECTANGULAR GRATE 14"x21"

No. 4572

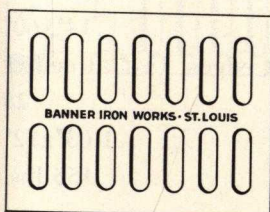


Size of Grate.....14"x21"
 Thickness.....1"
 Weight.....52 lbs.

Can Also Be Furnished in 1½" and 2" Thickness

CITY OF EAST ST. LOUIS, ILL., STANDARD INLET GRATE 18"x24"

No. 4863

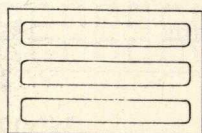


Size.....18"x24"
 Thickness of Metal.....1¼"
 Depth of Rib, over all.....3"
 Weight.....120 lbs.

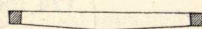
RECTANGULAR INLET GRATE

No. 4864

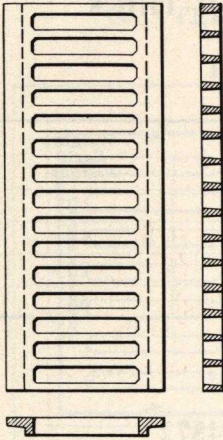
Used in Parks and Cemeteries when leaves are a problem



Size of Grate.....14"x22"
 Thickness of Grate.....1½"
 No. of Slots.....3
 Size of Slots.....19"x2½"
 Weight of Grate.....68 lbs.



BANNER IRON WORKS



RECTANGULAR DRAIN GRATES

No. 4574

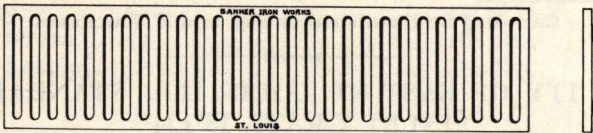
Size of Grate (Inches)	Thickness (Inches)	No. of Slots	Weight Pounds
17x21	2	8	102
17x41	2	16	185
17x46	2	18	211

Excellent to take storm water at foot of sloping drive leading to garage or similar opening.



RECTANGULAR DRAIN GRATE

No. 4575

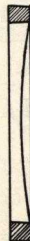
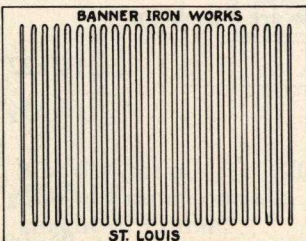


Size of Grate.....14"x60"
 Thickness of Grate.....1" at edges, 1 3/8" at center
 No. of Slots.....28
 Size of Slots.....1.03"x12"
 Weight of Grate.....155 lbs.



RECTANGULAR DRAIN GRATE

No. 4576

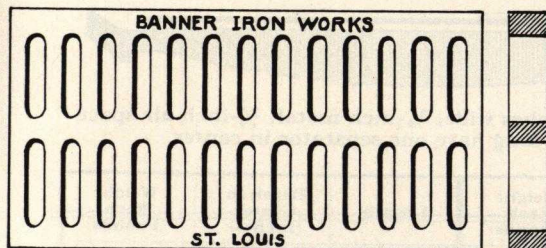


Size of Grate.....20"x26"
 Thickness of Grate.....1 3/4"
 No. of Slots.....24
 Size of Slots.....3/8"x17"
 Weight of Grate.....124 lbs.

BANNER IRON WORKS

CITY OF ST. LOUIS STANDARD GRATE

No. 4848 (Type A)



Size of Grate
15"x30"

Thickness of Grate
2½"

26 Slots
1⅛"x5½"

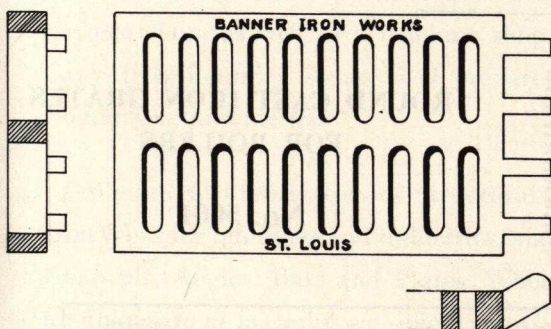
Weight of Grate
184 lbs.

Welded steel Angle Frames can be furnished for this grate. Details on request.



CITY OF ST. LOUIS STANDARD GRATE

No. 4849 (Type B)

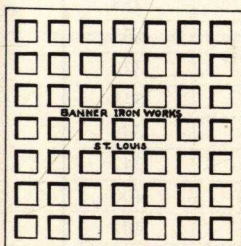


Size of Grate
15"x27½"

Thickness of Grate
2½"

20 Slots
1⅛"x5½"

Weight of Grate
163 lbs.



HIGHWAY GRATE

No. 4820 (Type D)

Size of Grate.....22"x22"

Thickness of Grate.....2¼"

No. of Openings.....49

Size of Openings.....2"x2"

Weight of Grate.....156 lbs.

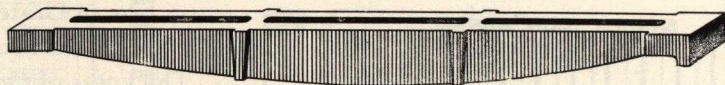


Additional rows of 2" □ holes can be added to either length or width or both, when extra large grates are required.

BANNER IRON WORKS

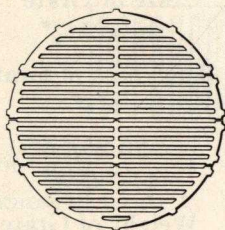
CAST IRON GRATE BARS

No. 5000



All Bars are Double, 3 inches wide, $\frac{3}{4}$ -inch metal, $\frac{3}{4}$ -inch air space
Bars under 4' 0" long have one separator in center

Length	Depth in Center (Inches)	Weight Each (Pounds)	Length	Depth in Center (Inches)	Weight Each (Pounds)
2' 6"	2½	28	4' 3"	3¾	60
3' 0"	2¾	30	4' 6"	4	65
3' 3"	2¾	31	5' 0"	4¼	76
3' 6"	3	36	5' 6"	4½	82
3' 9"	3¼	42	6' 0"	5	94
4' 0"	3½	54	6' 6"	5	121



ROUND CAST IRON GRATES FOR BOILERS

No. 5001

Diameter (Inches)	No. of Sections	Weight Each (Pounds)	Diameter (Inches)	No. of Sections	Weight Each (Pounds)
24	3	98	36	4	253
25	3	99	37	4	255
26	3	120	38	4	310
27	3	122	39	4	315
28	3	160	40	4	339
29	3	163	41	4	342
30	3	190	42	4	400
31	3	194	43	4	402
32	3	201	44	4	441
33	3	205	45	4	445
34	4	225	46	4	465
35	4	231	47	4	490

BANNER IRON WORKS

In this Catalog we have shown Standard designs for which we have patterns. If you do not find a size which can be adapted to your conditions, send us a sketch or drawing and we will be glad to quote on your special needs. We operate a well-equipped pattern shop, as well as a machine shop in connection with our Gray Iron Foundry so are well prepared to handle all of your Foundry requirements.

We are also fabricators of Structural Steel and Miscellaneous Iron Work for buildings and industries, and carry in stock I Beams, Channels, Angles, Bars and Plates. When you are in the market for this class of material we solicit your inquiries.

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